TASK 2 DATA EVALUATION RECORD

STUDY TYPE: Product Performance

MRID 480159-06. Schoenberg, P.L., Performance Testing of: Chemsico Aerosol Insecticide. EPA Reg. No. 9688-111. German Roaches, American Roaches, Houseflies, Mosquitoes, Cat Fleas, Carpenter Ants, Brown Dog Ticks, Wolf Spiders, Black Widow Spiders. Nov. 11, 2009.

OCSPP 810.3500: Premises Treatments

Product Name: CHEMSICO Aerosol Insecticide
EPA Reg. No. or File Symbol: 9688-111
Decision number: 485385
DP number: 417485

Prepared for
Registration Division (7505)
Office of Pesticide Programs
U.S. Environmental Protection Agency
Washington, DC 20460

Prepared by
Summitec Corporation
Task Order No.: 2-184

Primary Reviewer:
Dennis M. Opresko, Ph.D.
Signature: _____
Date: _____

Secondary Reviewers:
Robert H. Ross, M.S.
Signature: _____
Date: _____

Robert H. Ross, M.S. Program Manager
Signature: _____
Date: _____

Quality Assurance:
Angela M. Edmonds, B.S.
Signature: _____
Date: _____

Disclaimer

This review may have been altered subsequent to the contractors' signatures above.

DATA EVALUATION RECORD

[EPA Primary Reviewer's Name]

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MRID:	**480159-06.** Schoenberg, P.L., Performance Testing of: Chemsico Aerosol Insecticide. EPA Reg. No. 9688-111. German Roaches, American Roaches, Houseflies, Mosquitoes, Cat Fleas, Carpenter Ants, Brown Dog Ticks, Wolf Spiders, Black Widow Spiders. Nov. 11, 2009.
DP BARCODE:	417485
DECISION NO:	485385
SUBMISSION NO:	944311
SPONSOR:	Charles A. Duckworth United Industries Corp.
TESTING FACILITY:	United Industries Corp. Bridgeton, Mo.
STUDY DIRECTOR:	P. L. Schoenberg, United Industries Corp.
SUBMITTER:	E. Smith, United Industries Corp.
STUDY COMPLETED:	11/11/2009
CONFIDENTIALITY CLAIMS:	None
GOOD LABORATORY PRACTICE:	This study was designed and performed in United Industries Corp's Research and Development Laboratory under Pesticide Assessment Guidelines promulgated by the U.S. Environmental Protection Agency and was conducted in compliance with Good Laboratory Practice Standards, 40 CFR Part 160, revised at 48 FR 53946, Nov. 29, 1983; 54 FR 34052, effective Oct. 16, 1989.

TEST MATERIAL:

PRODUCT NAME: CHEMSICO Aerosol Insecticide
EPA REGISTRATION NUMBER OR FILE SYMBOL: 9688-111
ACTIVE INGREDIENT NAMES: Pyrethrins; Piperonyl butoxide (PBO); permethrin
CHEMICAL NAMES: Not given.
A.I. %: 0.1% Pyrethrins; 0.5% PBO; 0.2% permethrin
PC CODES: 069001 (pyrethrins); 067501 (PBO); 109701 (permethrin)
CAS NO.: Not given
FORMULATION TYPE: Aerosol spray.
PRODUCT APPLICATION RATE(S): Hold can upright and spray from a distance of 12-15 inches. Indoor [space spray] for flying insects: spray 5-10 seconds; leave room and keep closed for 15 min. Outdoors, flying insects; direct spray towards bushes and grass from a distance of 4-6 feet and allow spray to drift over area.
ACTIVE INGREDIENT APPLICATION RATE(S): Not given.

PROPOSED LABEL MARKETING CLAIMS:

[For Household Use • Controls residential and garden insects • Keeps killing for [8 weeks] [12 weeks*]! [2 months] [3 months*]• [8 weeks] [12 week*] control [2 months] [3 months*]• Seeks out bugs where they hide • Kills On contact • Kills fast plus kills bugs landing on treated surfaces up to [8 weeks] [12 week*] [2 months] [3 months*]• • For use on bedding, furniture and other inanimate objects infested with lice • For Use on premises to control fleas and ticks • Water-based formula • Low odor • Non-staining • Kills Flying and Crawling Insects • **Guaranteed Results or Your Money Back]

*Excluding mosquitoes, wasps, hornets and yellow jackets

Kills...ants, carpenter ants, beetles, roaches, crickets, earwigs, fleas, spiders, scorpions, ticks and other pests listed.

Highly effective against ants, beetles (including carpet, flour, grain, and ground beetles), centipedes, clover mites, cockroaches, crickets (including mole crickets), earwigs, firebrats, fleas, millipedes, moths, pillbugs, silverfish, sowbugs, spiders, scorpions, ticks, and other pests.....

STUDY REVIEW

Purpose: The efficacy (initial knockdown and kill performance) of Chemsico Aerosol Insecticide was evaluated against German roaches, American roaches, houseflies, mosquitoes, cat fleas, carpenter ants, brown dog ticks, wolf spiders, black widow spiders.

MATERIALS AND METHODS

Test Location: Bridgeton, Mo. (address for United Industries Corp. testing lab.).

Test Material(s): Formulation containing 0.1% pyrethrins, 0.2% permethrin and 0.5% piperonyl butoxide; same as the labeled product.

Test Species Name, Life Stage, Sex and Age: German cockroaches (*Blattella germanica*), American roaches (*Periplaneta americana*), houseflies (*Musca domesticus*), mosquitoes, cat fleas, (*Ctenocephalides felis*), carpenter ants *Camponotus modoc*), brown dog ticks (*Rhipicephalus sanguineus*), wolf spiders, and black widow spiders (*Latrodectus hesperus*),

Note: Scientific names not provided in MRID 480159-06, but added by reviewer.

Describe test containers, chambers and/or apparatus (include site description and location) and how experiment was conducted: Three methods were used – 1A for crawling insects, 2A for cat fleas, and 10A for flying insects:

United Industries Direct Spray Method 1A – Knockdown Screening Test:

I. Material needed
- A. Spray Test Cups – 5" Stainless Steel sieve, # 10 mesh, or similar, clear covers
- B. Teflon Emulsion
- C. Holding Cups – Clean paper or plastic, with clear covers, or similar
- D. Timer – seconds/minutes
- E. Crawling Insects
- F. Test Material
- G. Weighing balance

II. Preparation
- A. Coat the sides of each spray test cup with Teflon emulsion to prevent/reduce insect escapes during testing. Let dry.
- B. Place 5 – 10 insects into each test cup and cover with appropriate lid.
- D. Pre-spray each test product, thoroughly shaking each unit, clearing dip tubes, measuring average delivery rates, and evaluating spray patterns. Record data.

III. Testing
- A. With good ventilation under a fume hood or similar area, uncover roaches. Using a slight circular motion, spray each test cup from a distance of 8 – 12 inches, depending on spray pattern and discharge rate of the unit. A 1g. dose rate should approximate a light wetting of all insects in the test cup. A 3g. dose rate should produce a heavy wetting of all insects. Record actual amount of spray discharge after each application. (Note: The above spraying should approximate normal use pattern and application of the aerosol product.)
- B. Start timer after each spray application. Immediately transfer insects to clean holding cups, and cover. Evaluate and record knockdown (inability to move in a consistent manner) times KT_{50} (50% of population down) and KT_{90} (90% of population down). Evaluate insects for 24 hour kill and record. (Note: If knockdown times are expected to be less than 30 seconds and 24 hour kill is not being evaluated, insects need not be transferred to holding cups).
- C. Normally, one replicate will be 3 tests with at least 5 insects per test. A minimum of 2 replicates, on different days should be carried out and results averaged.

United Industries Flea Direct Spray Method 2A – Knockdown Screening Test - Aerosol:

I. Materials needed
- A. Spray Test Cups – 150 mm x 15 mm petri dishes, glass or plastic, or similar
- B. Paper towel, cut to fit petri dishes.
- C. # 20 mesh wire cloth, window screen, or similar, cut to fit petri dishes.
- D. Timer – seconds/minutes
- E. Cat fleas
- F. Test Material
- G. Weighing Balance

II. Preparation
- A. Cut both the paper towel and the wire cloth into round circles to fit into the petri dishes. The paper towel provides a good, white viewing background and also absorbs excess liquid. The wire cloth provides a climbing surface for the fleas and reduces jumping of the insects.
- B. Lightly anesthetize the fleas with carbon dioxide gas. Place fleas onto the paper towel in the bottom of the petri dishes, cover with one or two layers of wire cloth and replace petri dish covers. Allow the fleas to fully recover before treatment..
- C. Pre-spray each test aerosol, thoroughly shaking each unit, clearing dip tubes, measuring delivery rates, and evaluating spray patterns. Record data.

III. Testing
- A. With good ventilation under a fume hood or similar area, remove petri dish cover. Using a slight circular motion, spray each test cup from a distance of 8 – 12 inches, depending on spray pattern and discharge rate of the unit. Spray through the wire cloth until all fleas are treated with a light (1g.) to moderate (3g.) dose of spray. Record actual amount of spray discharge after each application. Replace petri dish cover.
- B. Start timer after each spray application. Evaluate and record knockdown times (KT_{90} – 90% of population down). Fleas are considered knocked down when they exhibit a complete loss of mobility (no climbing, crawling or jumping ability). Evaluate fleas for 24 hour kill and record.
- C. Normally, one replicate will be 3 tests with at least 10 insects per test. A minimum of 2 replicates, on different days should be carried out and results averaged.

United Industries Flying Insect Direct Spray Method 10A, Knockdown Screening Test - Aerosol:

I. Material needed
- A. Spray test jars – 16 oz glass jars
- B. Cloth mesh and rubber bands
- C. Timer – seconds/minutes
- D. Flying insects
- E. Test chamber – dimensions of at least 2000ft³
- F. Test material
- G. Weighing balance

II. Preparation
- A. Lightly anesthetize the flying insects with carbon dioxide gas.
- B. Place 3 - 10 flying insects into each of 7 test jars.
- C. Cover the test jars with mesh netting and secure with rubber bands.
- D. Allow the insects to fully recover before treatment.
- E. Pre-spray each test product, thoroughly shaking each unit, clearing dip tubes, measuring average delivery rates, and evaluating spray patterns. Record data.

III. Testing
- A. Place 6 test jars in the test chamber and arrange them according to Figure 1 (labeled 1-6). Jars 1 and 2 will be at a height of 4' 3', jars 3 and 4 at a height of 2' 9" and jars 5 and 6 at ground level. Place the seventh jar outside of the room to act as the control. The tester should stand straight back at a distance of 5' from the test jars. Hold the test product at arms length, perpendicular to the body and spray 3g in the direction of the test jars. Record actual amount of spray discharge after each application. (Note: The above spraying should approximate normal use pattern and application of the aerosol product.)
- B. Start timer after spray application. Evaluate and record knockdown (inability to move in a consistent manner) at 2 minute intervals for a period of 10 minutes. Take an additional knockdown reading at 1 hour. Evaluate insects for 24 hour kill and record.
- C. Normally, one replicate will include 6 test jars with at least 3 insects per jar. A minimum of 2 replicates, on different days should be carried out and results averaged.

Modifications to Method 1A, 2A, & 10A

Two replicates, three trials per replicate with 5 to 16 insects per trial were conducted. Two replicates, six test containers per housefly and mosquito testing.

Spider Testing: Two replicates, three trials per replicate with 1 spider each type per trial were conducted.

1 control using untreated containers was carried out for each replicate.

Approximately 3 grams of product application was used for each trial. Brown Dog Ticks and cat fleas were tested at approximately 1 gram of product per test. Fleas were tested in petri dishes. Initial knockdown and 24 hour kill performance recorded.

For flying insect testing (houseflies and mosquitoes), 16 oz. glass jar test containers were placed in six locations in a 2000 cubic foot spray test chamber, two containers on the floor, two at 2 feet, 9 inches above the floor, and two at 4 feet, 3 inches off the floor. All containers were covered with mesh. The containers were sprayed with product from a distance of 5 feet. Knockdown was recorded with time. Total kill recorded at 24 hours after exposure.

List the treatments including untreated control (express application rate as g/m^2):
Approximately 3 grams of product for each trial with the following exceptions: 1 gram of product for brown dog ticks and cat fleas. One control using untreated containers was carried out for each replicate.

Note: the test protocols state that the above spraying should approximate normal use pattern and application of the product.

Number of replicates per treatment: Two replicates with 3 trials per replicate with the following exceptions: houseflies and mosquitoes – two replicates with six containers.

Number of individuals per replicate: 5-16 arthropods per trial with the exception of spiders (1 spider per trial).

Length of exposure to treatment (time in seconds, minutes or hours): Single spray-on treatment.

Were tested specimens transferred to clean containers? Yes, for Method 1A; no for Methods 2A and 10A.

Experimental conditions (state relative humidity, temperature, and photoperiod): Not reported.

Data or endpoints collected/recorded: Knockdown times and 24 hour kill.

Data analysis: Average time for 100% knockdown and 24 hour mortality.

RESULTS

Test protocols were included in the study report (modifications of the protocols are listed above). Raw data for each trial in each replicate were included.

Results are shown in Tables 1-9.

Table I

German Roaches: Knockdown and Kill Efficacy - Direct Spray

Test	Application Rate (grams)	Knockdown (100%)	Kill per Trial - 24 Hour # of Insects	Kill %
Replicate 1				
Trial 1	2.83 g.	15 Seconds	8/8	100%
Trial 2	3.29 g.	11 Seconds	8/8	100%
Trial 3	3.06 g.	10 Seconds	8/8	100%
Control(R1)	-	0/8	0/8	0%
Replicate 2				
Trial 1	3.26 g.	12 Seconds	8/8	100%
Trial 2	2.87 g.	14 Seconds	8/8	100%
Trial 3	3.18 g.	11 Seconds	8/8	100%
Control(R2)	-	0/8	0/8	0%
Average	**3.08 g.**	**12 Seconds**	**48/48**	**100%**
Control (Avg.)		0%	0%	0%

Table II

American Roaches: Knockdown and Kill Efficacy - Direct Spray

Test	Application Rate (grams)	Knockdown (100%)	Kill per Trial - 24 Hour # of Insects	Kill %
Replicate 1				
Trial 1	2.92 g.	144 Seconds	5/5	100%
Trial 2	2.85 g.	175 Seconds	5/5	100%
Trial 3	2.89 g.	183 Seconds	5/5	100%
Control(R1)	-	0/5	0/5	0%
Replicate 2				
Trial 1	3.21 g.	168 Seconds	5/5	100%
Trial 2	3.24 g.	187 Seconds	5/5	100%
Trial 3	3.20 g.	173 Seconds	5/5	100%
Control(R2)	-	0/5	0/5	0%
Average	**3.05 g.**	**172 Seconds**	**30/30**	**100%**
Control (Avg.)		0%	0%	0%

Table III

Houseflies: Knockdown and Kill Efficacy - Direct Spray (per Chamber)

Test	Application Rate (grams)	Knockdown (in Minutes) 2	4	6	8	10	60	Kill per Container-24 Hour # of Insects	Kill %
Replicate 1	2.87 g.								
Container 1		3/11	7/11	9/11	10/11	11/11	11/11	11/11	100%
Container 2		4/11	7/11	10/11	10/11	11/11	11/11	11/11	100%
Container 3		0/11	0/11	2/11	7/11	10/11	11/11	11/11	100%
Container 4		0/11	2/11	4/11	8/11	9/11	11/11	11/11	100%
Container 5		0/11	0/11	0/11	1/11	4/11	11/11	11/11	100%
Container 6		1/10	2/10	4/10	5/10	5/10	10/10	10/10	100%
Control(R1)	-	0/11	0/11	0/11	0/11	0/11	0/11	0/11	0%
Replicate 2	3.34 g.								
Container 1		0/11	0/11	3/11	9/11	10/11	11/11	11/11	100%
Container 2		0/11	0/11	2/11	5/11	7/11	11/11	11/11	100%
Container 3		0/11	0/11	2/11	6/11	9/11	11/11	11/11	100%
Container 4		0/11	0/11	1/11	4/11	4/11	11/11	11/11	100%
Container 5		3/12	6/12	8/12	12/12	12/12	12/12	12/12	100%
Container 6		0/11	2/11	9/11	10/11	10/11	11/11	11/11	100%
Control(R2)	-	0/12	0/12	0/12	0/12	0/12	0/12	0/12	0%
Average	**3.11 g.**	**8%**	**20%**	**41%**	**66%**	**77%**	**100%**	**132/132**	**100%**
Control (Avg.)		0%						0/23	0%

Table IV

Mosquitoes: Knockdown and Kill Efficacy - Direct Spray (per Chamber)

Test	Application Rate (grams)	Knockdown (in Minutes) 2	4	6	8	10	60	Kill per Container-24 Hour # of Insects	Kill %
Replicate 1	2.93 g.								
Container 1		9/11	10/11	11/11	11/11	11/11	11/11	11/11	100%
Container 2		13/14	13/14	14/14	14/14	14/14	14/14	14/14	100%
Container 3		14/14	14/14	14/14	14/14	14/14	14/14	14/14	100%
Container 4		12/12	12/12	12/12	12/12	12/12	12/12	12/12	100%
Container 5		12/15	14/15	14/15	15/15	15/15	15/15	15/15	100%
Container 6		12/16	14/16	16/16	16/16	16/16	16/16	16/16	100%
Control(R1)	-	0/14	0/14	0/14	0/14	0/14	0/14	2/14	14%
Replicate 2	3.28 g.								
Container 1		10/14	12/14	14/14	14/14	14/14	14/14	14/14	100%
Container 2		11/12	11/12	12/12	12/12	12/12	12/12	12/12	100%
Container 3		3/10	7/10	9/10	9/10	10/10	10/10	10/10	100%
Container 4		7/14	9/14	12/14	14/14	14/14	14/14	13/13	100%
Container 5		10/13	12/13	13/13	13/13	13/13	13/13	13/13	100%
Container 6		5/14	9/14	9/14	13/14	14/14	14/14	14/14	100%
Control(R2)	-	0/15	0/15	0/15	0/15	0/15	0/15	2/15	13%
Average	**3.11 g.**	**75%**	**87%**	**95%**	**99%**	**100%**	**100%**	**158/158**	**100%**
Control (Avg.)		0%						4/29	14%

Table V

Carpenter Ants: Knockdown and Kill Efficacy - Direct Spray

Test	Application Rate (grams)	Knockdown (100%)	Kill per Trial - 24 Hour # of Insects	Kill %
Replicate 1				
Trial 1	3.07 g.	41 Seconds	6/6	100%
Trial 2	3.05 g.	35 Seconds	6/6	100%
Trial 3	3.20 g.	27 Seconds	6/6	100%
Control(R1)	-	0/6	0/6	0%
Replicate 2				
Trial 1	3.26 g.	42 Seconds	6/6	100%
Trial 2	3.31 g.	41 Seconds	6/6	100%
Trial 3	2.86 g.	38 Seconds	6/6	100%
Control(R2)	-	0/6	0/6	0%
Average	**3.13 g.**	**37 Seconds**	**36/36**	**100%**
Control (Avg.)		0%	0%	0%

Table VI

Brown Dog Ticks: Knockdown and Kill Efficacy - Direct Spray

Test	Application Rate (grams)	Knockdown (100%)	Kill per Trial - 24 Hour # of Insects	Kill %
Replicate 1				
Trial 1	0.89 g.	173 Seconds	5/5	100%
Trial 2	0.97 g.	182 Seconds	5/5	100%
Trial 3	0.98 g.	198 Seconds	5/5	100%
Control(R1)	-	0/5	0/5	0%
Replicate 2				
Trial 1	1.18 g.	185 Seconds	5/5	100%
Trial 2	0.87 g.	171 Seconds	5/5	100%
Trial 3	0.98 g.	167 Seconds	5/5	100%
Control(R2)	-	0/5	0/5	0%
Average	**0.98 g.**	**179 Seconds**	**30/30**	**100%**
Control (Avg.)		0%	0%	0%

Table VII

Wolf Spiders: Knockdown and Kill Efficacy - Direct Spray

Test	Application Rate (grams)	Knockdown (100%)	Kill per Trial - 24 Hour # of Insects	Kill %
Replicate 1				
Trial 1	3.14 g.	39 Seconds	1/1	100%
Trial 2	3.10 g.	42 Seconds	1/1	100%
Trial 3	3.17 g.	28 Seconds	1/1	100%
Control(R1)	-	0/1	0/1	0%
Replicate 2				
Trial 1	3.27 g.	114 Seconds	1/1	100%
Trial 2	3.28 g.	34 Seconds	1/1	100%
Trial 3	2.87 g.	52 Seconds	1/1	100%
Control(R2)	-	0/1	0/1	0%
Average	**3.14 g.**	**52 Seconds**	**6/6**	**100%**
Control (Avg.)		-	0%	0%

Table VIII

Black Widow Spiders: Knockdown and Kill Efficacy - Direct Spray

Test	Application Rate (grams)	Knockdown (100%)	Kill per Trial - 24 Hour # of Insects	Kill %
Replicate 1				
Trial 1	2.89 g.	39 Seconds	1/1	100%
Trial 2	3.26 g.	69 Seconds	1/1	100%
Trial 3	2.85 g.	73 Seconds	1/1	100%
Control(R1)	-	0/1	0/1	0%
Replicate 2				
Trial 1	3.41 g.	92 Seconds	1/1	100%
Trial 2	3.24 g.	63 Seconds	1/1	100%
Trial 3	3.18 g.	66 Seconds	1/1	100%
Control(R2)	-	0/1	0/1	0%
Average	**3.14 g.**	**67 Seconds**	**6/6**	**100%**
Control (Avg.)		-	0%	0%

Table IV

Cat Fleas: Knockdown and Kill Efficacy - Direct Spray

Test	Application Rate (grams)	Knockdown (100%)	Kill per Trial - 24 Hour # of Insects	Kill %
Replicate 1				
Trial 1	1.21 g.	122 Seconds	11/11	100%
Trial 2	1.16 g.	126 Seconds	12/12	100%
Trial 3	1.17 g.	107 Seconds	11/11	100%
Control(R1)	-	0/10	0/10	0%
Replicate 2				
Trial 1	1.09 g.	125 Seconds	15/15	100%
Trial 2	1.12 g.	93 Seconds	11/11	100%
Trial 3	1.13 g.	118 Seconds	12/12	100%
Control(R2)	-	0/13	1/13	8%
Average	**1.15 g.**	**115 Seconds**	**72/72**	**100%**
Control (Avg.)		-	0%	0%

Study Author's Conclusions

The results of this testing indicate that Chemsico Aerosol Insecticide is efficacious for knockdown and kill properties against German roaches, American roaches, houseflies, mosquitoes, carpenter ants, brown dog ticks, wolf spiders, black widow spiders, and cat fleas when used as a direct spray.

Reviewer's Conclusions

Control mortality was in most cases 0% (maximum 14%).

Average 24-hour percent mortality was 100% for all test species.

Average time for 100% knockdown was 12 seconds for German cockroaches; 172 seconds for American cockroaches; 60 minutes for houseflies, 10 minutes for mosquitoes, 37 seconds for carpenter ants, 179 seconds for brown dog ticks, 52 seconds for wolf spiders, 67 seconds for black widow spiders, and 115 seconds for cat fleas. For spiders studies, only 8 individuals (3 replicates of 2 individuals each and 2 individuals in the control) were used, which is unacceptably low for an efficacy study.

Note: the test protocols state that the amount sprayed in the study should approximate normal use pattern and application of the product. The product label does not specify an amount to apply nor does it indicate for how many seconds the spray should be applied for direct contact spraying.

Reviewer's Recommendations

The the study supports the label claim: kills German roaches, American roaches, houseflies, mosquitoes, carpenter ants, brown dog ticks, and cat fleas when used as a direct spray. For knockdown and 'kills fast' claims (>90% within ~30 seconds for arthropods other than stinging hymenopterans), claims are supported for German cockroaches and carpenter ants. Because only 100% knockdown values were reported, it is unknown if some pests might have exhibited 90% knockdown at a shorter time interval. Claims against spiders are unacceptable due to inadequate replication.